Cisco Global Site Selector 4490 Hardware Installation Guide

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Preface

This guide is intended to help you install your Cisco Global Site Selector 4490 and get it ready for operation. It describes how to prepare your site for installation, how to install the GSS 4490 in an equipment rack, and how to maintain and troubleshoot the system hardware.

This preface contains the following major sections:

- Audience
- How to Use This Guide
- Related Documentation
- Symbols and Conventions
- Obtaining Documentation, Obtaining Support, and Security Guidelines

Audience

Warning **Only trained and qualified personnel should be allowed to install, replace, or service this equipment.**

This guide is intended for the following trained and qualified service personnel who are responsible for installing and operating the Cisco Global Site Selector 4490:

- System installer
- Hardware technician
- System operator

You should be familiar with internetworking equipment and cabling, and have a basic knowledge of electronic circuitry and wiring practices.

To complete the installation, including the software configuration for the GSS 4490, you should be familiar with basic networking principles and configurations, especially web page protocols.

How to Use This Guide

This section describes the chapters and contents in this guide.

Chapter/Appendix	Description
Chapter 1, Introduction	Describes the physical properties and provides a functional overview of the Cisco Global Site Selector 4490.
Chapter 2, Preparing for Installation	Describes safety considerations and gives an overview of the installation and procedures you should perform *before* the actual installation.
Chapter 3, Installing the Cisco Global Site Selector 4490	Describes how to install the hardware and connect the external network interface cables.
Chapter 4, Troubleshooting the System Hardware	Describes troubleshooting procedures for the hardware installation.
Chapter 5, Maintaining the Cisco Global Site Selector 4490	Contains the procedures for keeping your GSS 4490 in proper operating condition.
Appendix A, Specifications	Lists the hardware specifications for the Cisco Global Site Selector 4490.
Appendix B, Connecting a Modem to the GSS 4490 Console Port	Provided information for configuring a dial-up modem and connecting it to the console port on the GSS 4490.
Appendix C, Regulatory Compliance and EMI Class A Warnings	Provides additional information on regulatory compliance and safety pertaining to the Cisco Global Site Selector 4490.

Related Documentation

In addition to this document, the GSS documentation set includes the following:

Document Title	Description
Release Note for the Cisco Global Site Selector	Provides information on operating considerations, caveats, and commands for the GSS software.
Cisco Global Site Selector Configuration Guide	Explains the features of the GSS software (CLI and GUI) and provides instructions for the proper installation, configuration, and monitoring of the GSS product. Steps for troubleshooting many common problems are also provided.
Cisco Global Site Selector Command Reference	Provides an alphabetical list of all GSS command-line interface (CLI) commands by mode including syntax, options, and related commands.
Regulatory Compliance and Safety Information for the Cisco Global Site Selector 4490	Provides regulatory compliance and safety information for the Cisco Global Site Selector 4490.

Symbols and Conventions

Graphical user interface elements use the following conventions:

- **Bold text** indicates a command in a paragraph.
- `Courier text` indicates text that appears in a command line, including the CLI prompt.
- **`Courier bold text`** indicates commands and text you enter in a command line.
- *Italic text* indicates the first occurrence of a new term, book title, and emphasized text.

Lists use the following conventions:

1. A numbered list indicates that the order of the list items is important.
    a. An alphabetical list indicates that the order of the secondary list items is important.
- A bulleted list indicates that the order of the list topics is unimportant.
    – An indented list indicates that the order of the list subtopics is unimportant.

Notes, cautionary statements, and safety warnings use these conventions:

Note Means *reader take note*. Notes contain helpful suggestions or references to materials not contained in this manual.

Caution Means *reader be careful*. You are capable of doing something that might result in equipment damage or loss of data.

Warning **IMPORTANT SAFETY INSTRUCTIONS**

This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device.

SAVE THESE INSTRUCTIONS

Waarschuwing **BELANGRIJKE VEILIGHEIDSINSTRUCTIES**

Dit waarschuwingssymbool betekent gevaar. U verkeert in een situatie die lichamelijk letsel kan veroorzaken. Voordat u aan enige apparatuur gaat werken, dient u zich bewust te zijn van de bij elektrische schakelingen betrokken risico's en dient u op de hoogte te zijn van de standaard praktijken om ongelukken te voorkomen. Gebruik het nummer van de verklaring onderaan de waarschuwing als u een vertaling van de waarschuwing die bij het apparaat wordt geleverd, wilt raadplegen.

BEWAAR DEZE INSTRUCTIES

Varoitus **TÄRKEITÄ TURVALLISUUSOHJEITA**

Tämä varoitusmerkki merkitsee vaaraa. Tilanne voi aiheuttaa ruumiillisia vammoja. Ennen kuin käsittelet laitteistoa, huomioi sähköpiirien käsittelemiseen liittyvät riskit ja tutustu onnettomuuksien yleisiin ehkäisytapoihin. Turvallisuusvaroitusten käännökset löytyvät laitteen mukana toimitettujen käännettyjen turvallisuusvaroitusten joukosta varoitusten lopussa näkyvien lausuntonumeroiden avulla.

SÄILYTÄ NÄMÄ OHJEET

Attention **IMPORTANTES INFORMATIONS DE SÉCURITÉ**

Ce symbole d'avertissement indique un danger. Vous vous trouvez dans une situation pouvant entraîner des blessures ou des dommages corporels. Avant de travailler sur un équipement, soyez conscient des dangers liés aux circuits électriques et familiarisez-vous avec les procédures couramment utilisées pour éviter les accidents. Pour prendre connaissance des traductions des avertissements figurant dans les consignes de sécurité traduites qui accompagnent cet appareil, référez-vous au numéro de l'instruction situé à la fin de chaque avertissement.

CONSERVEZ CES INFORMATIONS

Warnung **WICHTIGE SICHERHEITSHINWEISE**

Dieses Warnsymbol bedeutet Gefahr. Sie befinden sich in einer Situation, die zu Verletzungen führen kann. Machen Sie sich vor der Arbeit mit Geräten mit den Gefahren elektrischer Schaltungen und den üblichen Verfahren zur Vorbeugung vor Unfällen vertraut. Suchen Sie mit der am Ende jeder Warnung angegebenen Anweisungsnummer nach der jeweiligen Übersetzung in den übersetzten Sicherheitshinweisen, die zusammen mit diesem Gerät ausgeliefert wurden.

BEWAHREN SIE DIESE HINWEISE GUT AUF.

Avvertenza **IMPORTANTI ISTRUZIONI SULLA SICUREZZA**

Questo simbolo di avvertenza indica un pericolo. La situazione potrebbe causare infortuni alle persone. Prima di intervenire su qualsiasi apparecchiatura, occorre essere al corrente dei pericoli relativi ai circuiti elettrici e conoscere le procedure standard per la prevenzione di incidenti. Utilizzare il numero di istruzione presente alla fine di ciascuna avvertenza per individuare le traduzioni delle avvertenze riportate in questo documento.

CONSERVARE QUESTE ISTRUZIONI

Advarsel **VIKTIGE SIKKERHETSINSTRUKSJONER**

Dette advarselssymbolet betyr fare. Du er i en situasjon som kan føre til skade på person. Før du begynner å arbeide med noe av utstyret, må du være oppmerksom på farene forbundet med elektriske kretser, og kjenne til standardprosedyrer for å forhindre ulykker. Bruk nummeret i slutten av hver advarsel for å finne oversettelsen i de oversatte sikkerhetsadvarslene som fulgte med denne enheten.

TA VARE PÅ DISSE INSTRUKSJONENE

Aviso **INSTRUÇÕES IMPORTANTES DE SEGURANÇA**

Este símbolo de aviso significa perigo. Você está em uma situação que poderá ser causadora de lesões corporais. Antes de iniciar a utilização de qualquer equipamento, tenha conhecimento dos perigos envolvidos no manuseio de circuitos elétricos e familiarize-se com as práticas habituais de prevenção de acidentes. Utilize o número da instrução fornecido ao final de cada aviso para localizar sua tradução nos avisos de segurança traduzidos que acompanham este dispositivo.

GUARDE ESTAS INSTRUÇÕES

¡Advertencia! **INSTRUCCIONES IMPORTANTES DE SEGURIDAD**

Este símbolo de aviso indica peligro. Existe riesgo para su integridad física. Antes de manipular cualquier equipo, considere los riesgos de la corriente eléctrica y familiarícese con los procedimientos estándar de prevención de accidentes. Al final de cada advertencia encontrará el número que le ayudará a encontrar el texto traducido en el apartado de traducciones que acompaña a este dispositivo.

GUARDE ESTAS INSTRUCCIONES

Varning! **VIKTIGA SÄKERHETSANVISNINGAR**

Denna varningssignal signalerar fara. Du befinner dig i en situation som kan leda till personskada. Innan du utför arbete på någon utrustning måste du vara medveten om farorna med elkretsar och känna till vanliga förfaranden för att förebygga olyckor. Använd det nummer som finns i slutet av varje varning för att hitta dess översättning i de översatta säkerhetsvarningar som medföljer denna anordning.

SPARA DESSA ANVISNINGAR

Figyelem **FONTOS BIZTONSÁGI ELOÍRÁSOK**

Ez a figyelmezeto jel veszélyre utal. Sérülésveszélyt rejto helyzetben van. Mielott bármely berendezésen munkát végezte, legyen figyelemmel az elektromos áramkörök okozta kockázatokra, és ismerkedjen meg a szokásos balesetvédelmi eljárásokkal. A kiadványban szereplo figyelmeztetések fordítása a készülékhez mellékelt biztonsági figyelmeztetések között található; a fordítás az egyes figyelmeztetések végén látható szám alapján keresheto meg.

ORIZZE MEG EZEKET AZ UTASÍTÁSOKAT!

Предупреждение **ВАЖНЫЕ ИНСТРУКЦИИ ПО СОБЛЮДЕНИЮ ТЕХНИКИ БЕЗОПАСНОСТИ**

Этот символ предупреждения обозначает опасность. То есть имеет место ситуация, в которой следует опасаться телесных повреждений. Перед эксплуатацией оборудования выясните, каким опасностям может подвергаться пользователь при использовании электрических цепей, и ознакомьтесь с правилами техники безопасности для предотвращения возможных несчастных случаев. Воспользуйтесь номером заявления, приведенным в конце каждого предупреждения, чтобы найти его переведенный вариант в переводе предупреждений по безопасности, прилагаемом к данному устройству.

СОХРАНИТЕ ЭТИ ИНСТРУКЦИИ

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此警告符号代表危险。您正处于可能受到严重伤害的工作环境中。在您使用设备开始工作之前，必须充分意识到触电的危险，并熟练掌握防止事故发生的标准工作程序。请根据每项警告结尾提供的声明号码来找到此设备的安全性警告说明的翻译文本。

请保存这些安全性说明

警告　安全上の重要な注意事項

「危険」の意味です。人身事故を予防するための注意事項が記述されています。装置の取り扱い作業を行うときは、電気回路の危険性に注意し、一般的な事故防止策に留意してください。警告の各国語版は、各注意事項の番号を基に、装置に付属の「Translated Safety Warnings」を参照してください。

これらの注意事項を保管しておいてください。

Obtaining Documentation, Obtaining Support, and Security Guidelines

For information on obtaining documentation, obtaining support, providing documentation feedback, security guidelines, and also recommended aliases and general Cisco documents, see the monthly *What's New* in Cisco Product Documentation, which also lists all new and revised Cisco technical documentation, at:

http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html

Introduction

This chapter provides a basic functional overview of the Cisco Global Site Selector 4490 and describes the GSS hardware, major components, and front and back panel indicators and controls.

This chapter contains the following major sections:

- Introduction
- System Hardware Features
- Hardware Features

Introduction

The Cisco Global Site Selector 4490 is a networking product that provides site selection services that are critical for disaster recovery deployments involving Internet and intranet data centers. The GSS globally load balances traffic between geographically distributed data centers managed by other server load balancers (SLBs) such as Cisco Content Services Switches and Cisco Content Switching Modules, IOS SLBs, and Cisco LocalDirectors. The GSS is the cornerstone of disaster recovery in such distributed deployments and enables businesses to confidently deploy global Internet and intranet applications with the knowledge that users will be quickly routed to standby data centers should problems occur.

The Global Site Selector 4490 is deployed at strategic locations within your network. The GSS performs two major functions when deployed with other SLBs:

- It takes an active role in the domain name server (DNS) infrastructure, connecting clients to SLBs that support the requested website.
- It continuously monitors the load and availability of SLBs in its network, selecting the SLB that is most able to answer each client request.

By off-loading DNS resolution from traditional DNS servers, the GSS optimizes global site selection and increases DNS responsiveness. And through its monitoring of load and availability the GSS increases the fault tolerance and scalability of large websites and data centers.

System Hardware Features

The Cisco Global Site Selector 4490 is configured for AC-input power and has a single AC-input power supply. The GSS 4490 comes with an integrated dual-port Ethernet controller. This controller provides an interface for connecting to 10-Mbps, 100-Mbps, or 1000-Mbps networks.

The GSS 4490 has two 10BASE-T/100BASE-TX/1000BASE-TX Ethernet ports with RJ-45 receptacles. Both Ethernet ports support autonegotitate, full-duplex, or half-duplex operation on an Ethernet LAN.

Figure 1-1 shows the Cisco Global Site Selector 4490 front panel. Figure 1-2 shows the Cisco Global Site Selector 4490 rear panel.

Figure 1-1 Cisco Global Site Selector 4490—Front View

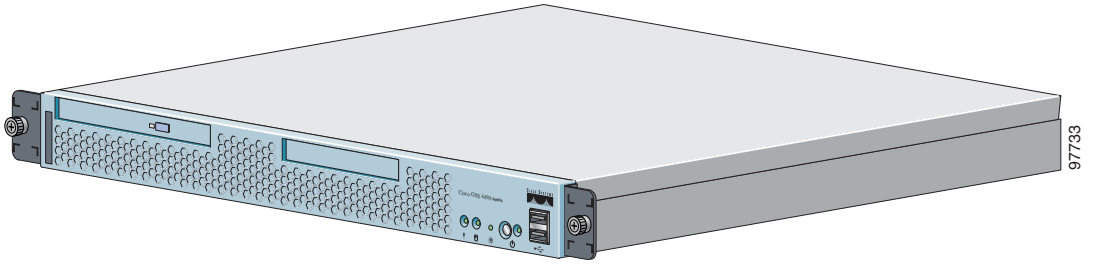
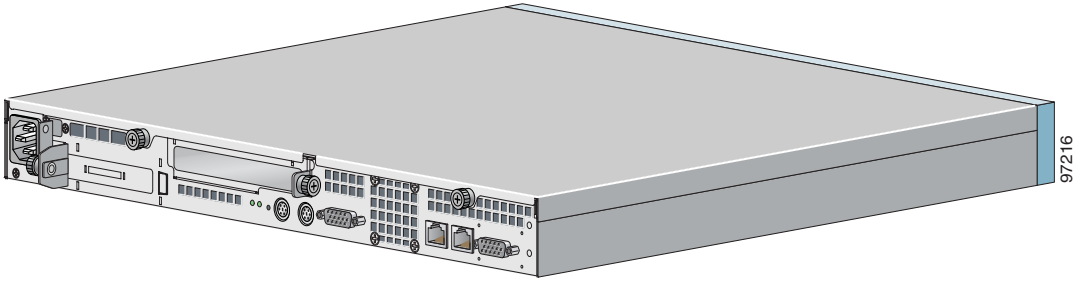


Figure 1-2 Cisco Global Site Selector 4490—Rear View



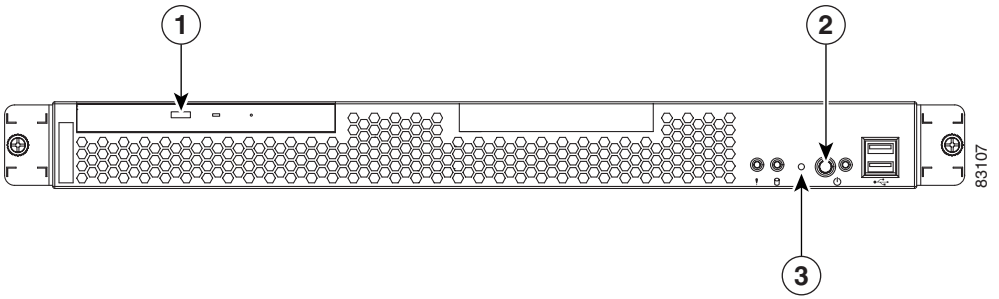
Hardware Features

This section illustrates and describes the front and back panel controls, LED indicators, ports, and connectors on the Cisco Global Site Selector 4490.

Front Panel Control Buttons

Figure 1-3 shows the GSS front panel, and Table 1-1 describes the front panel control buttons.

Figure 1-3 Global Site Selector 4490 Front Panel



1	CD eject button	**2**	Power control button
3	Reset button		

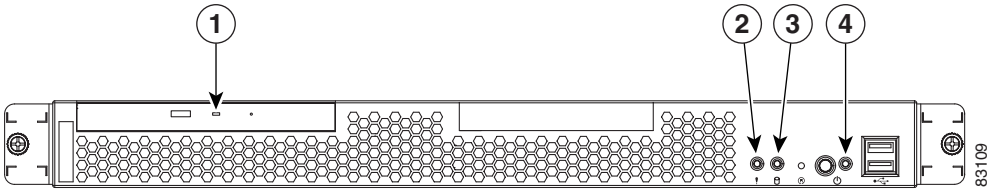
Table 1-1 Front Panel Control Buttons

Item	Description
CD eject button	Releases a CD from the drive.
Power control button	Powers the GSS 4490 on and off.
Reset button	Resets the GSS 4490 and runs the power-on self-test (POST). Use a pen or the end of a straightened paper clip to press the button. **Note** This is a hardware reset button and does not restore the device to the factory default software settings.

LED Indicators

Figure 1-4 shows the location of front panel LEDs, and Table 1-2 describes their function.

Figure 1-4 Front Panel LEDs



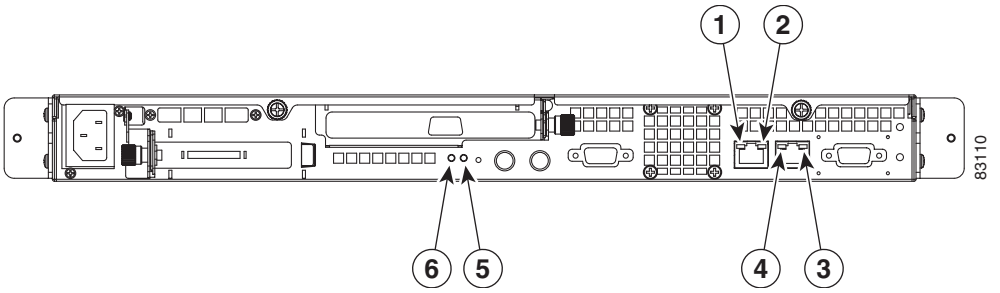
1	CD-ROM drive activity	**2**	System error
3	Hard disk drive activity	**4**	Power

Table 1-2 Front Panel LEDs

LED	Color	State	Description
CD-ROM drive activity	Green	On	Indicates that the CD-ROM drive is in use.
System error	Amber	On	Indicates that a system error has occurred. An LED on the diagnostic LED panel is also on to further isolate the error.
Hard disk drive activity	Green	Flashing	Indicates that the associated hard disk drive is in use.
Power	Green	On	Indicates that the GSS 4490 power is on.
		Flashing	Indicates that the GSS 4490 is in standby mode.

Figure 1-5 shows the location of back panel LEDs, and Table 1-3 describes their function.

Figure 1-5 Back Panel LEDs



1	Ethernet 0 activity	**2**	Ethernet 0 link
3	Ethernet 1 activity	**4**	Ethernet 1 link
5	Power	**6**	System error

Table 1-3 Back Panel LEDs

Indicator	Color	State	Description
Ethernet 0 link	Green	On	Indicates that the speed of the Ethernet LAN is 1000BASE-TX.
		Off	Indicates that the speed of the Ethernet LAN is 10BASE-T/100BASE-TX.
Ethernet 0 activity	Green	Blinking	Indicates that there is an active link connection on the 10/100/1000BASE-T interface for Ethernet port 0.
Ethernet 1 link	Green	On	Indicates that the speed of the Ethernet LAN is 1000BASE-TX.
		Off	Indicates that the speed of the Ethernet LAN is 10BASE-T/100BASE-TX.
Ethernet 1 activity	Green	Blinking	Indicates that there is an active link connection on the 10/100/1000BASE-T interface for Ethernet port 1.
Power	Green	On	Indicates that the GSS 4490 power is on.
System error	Amber	Blinking	Indicates a memory or fan error.

Input/Output Ports and Connectors

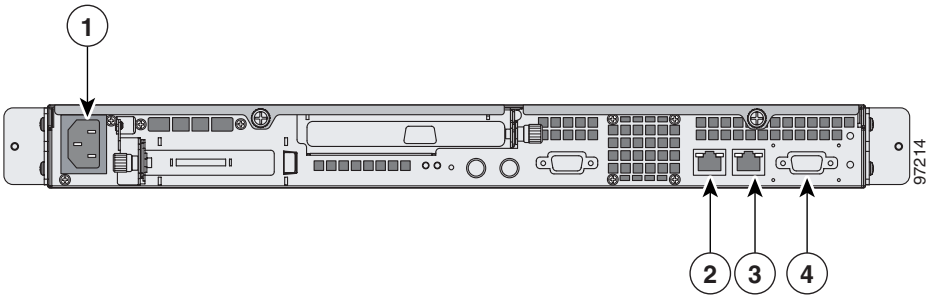
The Cisco Global Site Selector 4490 supports the following I/O connectors on the back of the device:

- Ethernet connectors
- Console port connector

Warning **To avoid electric shock, do not connect safety extra-low voltage (SELV) circuits to telephone-network voltage (TNV) circuits. LAN ports contain SELV circuits, and WAN ports contain TNV circuits. Some LAN and WAN ports both use RJ-45 connectors. Use caution when connecting cables.**

Figure 1-6 shows the location of the GSS back panel ports and receptacles.

Figure 1-6 Global Site Selector 4490 Back Panel Ports and Receptacles



1	AC power receptacle	**2**	Ethernet 0 receptacle
3	Ethernet 1 receptacle	**4**	Console port

Table 1-4 describes the back panel ports and receptacles.

Table 1-4 Back Panel Ports and Connectors

Item	Description
AC power receptacle	The AC power cord connects to this plug.
Ethernet 0 port	This 10/100/1000BASE-T port is autosensing with full-duplex capability; it connects your Cisco Global Site Selector 4490 to the Ethernet LAN.
Ethernet 1 port	This 10/100/1000BASE-T port is autosensing with full-duplex capability; it connects your GSS 4490 to the Ethernet LAN.
Console port	This is a standard RS 232 serial port for connecting to a console or terminal.

Ethernet Port

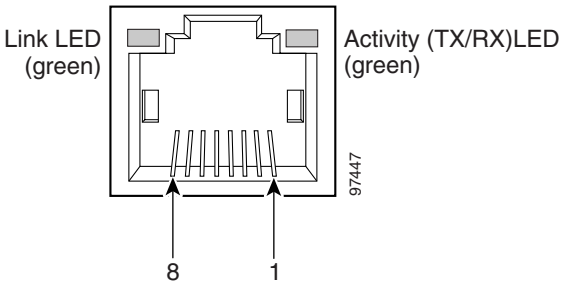
Your GSS 4490 comes with one integrated dual-port Ethernet controller. This controller provides an interface for connecting to 10-Mbps, 100-Mbps, or 1000-Mbps networks and support autonegotitate, full-duplex, or half-duplex operation on an Ethernet LAN.

To access the Ethernet port, connect a Category 3, 4, or 5 unshielded twisted-pair (UTP) cable to the RJ-45 connector on the back of the device.

Note The 100BASE-TX/1000BASE-TX Ethernet standard requires that the cabling in the network be Category 5 or higher.

Figure 1-7 shows the pin number assignments for the Ethernet RJ-45 port.

Figure 1-7 Ethernet Port Connector



Console Port

Your GSS 4490 has one standard RS 232 serial port located on the back of the device. Figure 1-8 shows the pin number assignments for the 9-pin, male D-shell serial port connector on the back of the GSS 4490. These pin number assignments conform to the industry standard.

Figure 1-8 Console Port Connector

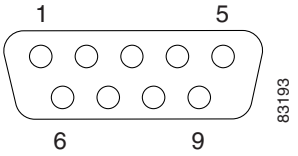


Table 1-5 lists the connector pinouts for the console port on the GSS 4490 back panel.

Table 1-5 Console Port Connector Pinouts

Pin Number	Signal Name
1	DCD (Data Carrier Detect)
2	RD (Receive Data)
3	TD (Transmit Data)
4	DTR (Data Terminal Ready)
5	SG (Signal Ground)
6	DSR (Data Set Ready)
7	RTS (Request to Send)
8	CTS (Clear to Send)
9	RI (Ring Indicator)

The console port operates at the following settings, as outlined in Table 1-6. These settings are not user-configurable.

Table 1-6 GSS Console Port Settings

Parameters	Settings
Baud	9600
Data Bits	8
Parity	None
Stop Bits	1
Terminal Type	VT100/ANSI
Flow Control	None

Preparing for Installation

This chapter contains important safety information you should know before working with the Cisco Global Site Selector 4490. Use the following guidelines to ensure your own personal safety and to help protect your GSS from potential damage.

This chapter contains the following major sections:

- Safety Warnings
- Site Requirements
- Safety Guidelines

Note Read Appendix C, Regulatory Compliance and EMI Class A Warnings and the *Regulatory Compliance and Safety Information for the Cisco Global Site Selector 4490* document before you prepare the GSS for installation.

Safety Warnings

Before you install the Cisco Global Site Selector 4490, observe the following safety warnings.

Warning **Only trained and qualified personnel should be allowed to install, replace, or service this equipment.**

Warning **Read the installation instructions before connecting the system to the power source.**

Warning **Before working on a system that has an on/off switch, turn OFF the power and unplug the power cord.**

Warning **The device is designed to work with TN power systems.**

Warning **This unit is intended for installation in restricted access areas. A restricted access area is where access can only be gained by service personnel through the use of a special tool, lock and key, or other means of security, and is controlled by the authority responsible for the location.**

Warning **To avoid electric shock, do not connect safety extra-low voltage (SELV) circuits to telephone-network voltage (TNV) circuits. LAN ports contain SELV circuits, and WAN ports contain TNV circuits. Some LAN and WAN ports both use RJ-45 connectors. Use caution when connecting cables.**

Warning **This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that the protective device is rated not greater than: 15A minimum, 60VDC.**

Warning **This product requires short-circuit (overcurrent) protection, to be provided as part of the building installation. Install only in accordance with national and local wiring regulations.**

Warning **This equipment is intended to be grounded. Ensure that the host is connected to earth ground during normal use.**

Warning **The plug-socket combination must be accessible at all times, because it serves as the main disconnecting device.**

Warning **This equipment must be grounded. Never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available.**

Warning **Do not work on the system or connect or disconnect cables during periods of lightning activity.**

Warning **Before working on equipment that is connected to power lines, remove jewelry (including rings, necklaces, and watches). Metal objects will heat up when connected to power and ground and can cause serious burns or weld the metal object to the terminals.**

Warning **Ultimate disposal of this product should be handled according to all national laws and regulations.**

Warning **There is the danger of explosion if the battery is replaced incorrectly. Replace the battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.**

Warning **This unit might have more than one power supply connection. All connections must be removed to de-energize the unit.**

Warning **Blank faceplates and cover panels serve three important functions: they prevent exposure to hazardous voltages and currents inside the chassis; they contain electromagnetic interference (EMI) that might disrupt other equipment; and they direct the flow of cooling air through the chassis. Do not operate the system unless all cards, faceplates, front covers, and rear covers are in place.**

Warning **Never attempt to lift the chassis with the handles on the power supplies, fan trays, or the switching modules. These handles are not designed to support the weight of the chassis. Using them to lift or support the chassis can result in severe damage to the equipment and serious bodily injury.**

Warning **Before connecting or disconnecting ground or power wires to the chassis, ensure that power is removed from the DC circuit. To ensure that all power is OFF, locate the circuit breaker on the panel board that services the DC circuit, switch the circuit breaker to the OFF position, and tape the switch handle of the circuit breaker in the OFF position.**

Warning **Connect the unit only to DC power source that complies with the safety extra-low voltage (SELV) requirements in IEC 60950 based safety standards.**

Warning **A readily accessible two-poled disconnect device must be incorporated in the fixed wiring.**

Warning **When installing or replacing the unit, the ground connection must always be made first and disconnected last.**

Warning **After installing system components in a rack, never pull more than one component out of the rack on its slide assemblies at one time. The weight of more than one extended component could cause the rack to tip over and injure someone.**

Warning **Stability hazard. The rack stabilizing mechanism must be in place, or the rack must be bolted to the floor before you slide the unit out for servicing. Failure to stabilize the rack can cause the rack to tip over.**

Warning **To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:**

- **This unit should be mounted at the bottom of the rack if it is the only unit in the rack.**
- **When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.**

If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.

Warning **This equipment is to be installed and maintained by service personnel only as defined by AS/NZS 3260 Clause 1.2.14.3 Service Personnel.**

Warning **The safety cover is an integral part of the product. Do not operate the unit without the safety cover installed. Operating the unit without the cover in place will invalidate the safety approvals and pose a risk of fire and electrical hazards.**

Site Requirements

Before you select an installation site for the GSS 4490, read the electrical, environmental, and physical requirements as described in Appendix A, Specifications.

Choosing a Site for Installation

Refer to the following guidelines when choosing a site for installation:

- Install the system in a restricted access area, where access can be gained only by service personnel through the use of a special tool, lock and key, or other means of security.
- Choose a site with a dry, clean, well-ventilated and air-conditioned area.
- Choose a site that maintains an ambient temperature of 32 to 104° F (0 to 40° C).

Ensuring Overcurrent Protection

The system relies on the protective devices in the building installation for protection against short-circuit, overcurrent, and earth (grounding) fault. Ensure that the protective devices in the building installation are properly rated to protect the system, and that they comply with national and local codes.

Grounding the GSS 4490

Refer to the following guidelines when grounding the GSS 4490:

- Do not defeat the ground conductor on an AC plug.
- Connect AC-powered systems to grounded power outlets.
- Connect the system to earth (ground).

Safety Guidelines

When you install the GSS 4490, observe all of the caution and warning statements in the installation procedures. For warning translations, refer to the *Regulatory Compliance and Safety Information for the Cisco Global Site Selector 4490* document.

Read the following guidelines to help ensure your safety and protect the equipment. These guidelines may not cover all potentially hazardous situations you may encounter during system installation, so *be alert*.

This section includes the following safety guidelines:

- General Precautions
- Protecting Against Electrostatic Discharge
- Rack Installation Safety Guidelines
- Ensuring Proper Airflow
- Stabilizing the System

General Precautions

Observe the following general precautions for using and working with your GSS 4490:

- Observe and follow service markings. Do not service any Cisco product except as explained in your system documentation. Opening or removing covers that are marked with the triangular symbol with a lightning bolt may expose you to electrical shock. Components inside these compartments should be serviced only by an authorized service technician.
- Should any of the following conditions occur, unplug the product from the electrical outlet and replace the part or contact your authorized service provider:
  - The power cable or plug is damaged.
  - An object has fallen into the product.
  - The product has been exposed to water.
  - The product has been dropped or damaged.
  - The product does not operate correctly when you follow the operating instructions.

- Keep your system components away from radiators and heat sources. Also, do not block cooling vents.
- Do not spill food or liquids on your system components, and never operate the product in a wet environment.
- Keep tools and chassis components off the floor and away from foot traffic.
- Clear the area of possible hazards, such as moist floors and missing safety grounds.
- Keep the area around the chassis free from dust and foreign conductive material (such as metal flakes from nearby construction activity).
- Do not push any objects into the openings of your system components. Doing so can cause fire or electric shock by shorting out interior components.
- Use the product only with other Cisco-approved equipment.
- Allow the product to cool before removing covers or touching internal components.
- Use the correct external power source. Operate the product only from the type of power source indicated on the electrical ratings label. If you are not sure of the type of power source required, consult your service representative or local power company.
- Use only approved power cables. If you have not been provided with a power cable for your GSS 4490 or for any AC-powered option intended for your system, purchase a power cable that is approved for use in your country. The power cable must be rated for the product and for the voltage and current marked on the product's electrical ratings label. The voltage and current rating of the cable should be greater than the ratings marked on the product.
- Help to prevent electric shock by plugging the system components and peripheral power cables into properly grounded electrical outlets. These cables are equipped with three-prong plugs to help ensure proper grounding. Do not use adapter plugs or remove the grounding prong from a cable.
- Do not use appliance or voltage converters or kits sold for appliances with your product.
- Protect your system components from sudden, transient increases and decreases in electrical power by using a surge suppressor, line conditioner, or uninterruptible power supply (UPS).

- Position cables and power cords carefully; route cables and the power cord and plug so that they cannot be stepped on or tripped over. Be sure that nothing rests on your system components' cables or power cord.
- Do not modify power cables or plugs. Consult a licensed electrician or your power company for site modifications. Always follow your local or national wiring rules.

Protecting Against Electrostatic Discharge

Static electricity can harm delicate components inside the GSS 4490. Electrostatic discharge (ESD) damage occurs when electronic cards or components are mishandled and can result in complete or intermittent failures. To prevent static damage, discharge static electricity from your body before you touch any of your system's electronic components. You can do so by touching an unpainted metal surface on the chassis.

You can also take the following steps to prevent damage from ESD:

- Always wear an ESD-preventive wrist or ankle strap when handling electronic components. Connect one end of the strap to an ESD jack or an unpainted metal component on the system (such as a captive installation screw).
- When unpacking a static-sensitive component from its shipping carton, do not remove the component from the antistatic packing material until you are ready to install the component in your system. Just before unwrapping the antistatic packaging, be sure to discharge static electricity from your body. Place the removed component on an antistatic surface or in a static shielding bag.
- When transporting a sensitive component, first place it in an antistatic container or packaging.
- Handle all sensitive components in a static-safe area. If possible, use antistatic floor pads and workbench pads.
- Avoid contact between the cards and clothing. The wrist strap only protects the card from ESD voltages on the body; ESD voltages on clothing can still cause damage.

Rack Installation Safety Guidelines

Before installing your GSS 4490 in a rack, review the following guidelines:

- Two or more people are required to install the device in a rack.
- Ensure that the room air temperature is below 95°F (35°C).
- Do not block any air vents; usually 6 inches (15.24 cm) of space provides proper airflow.
- Plan the device installation starting from the bottom of the rack.
- Install the heaviest device in the bottom of the rack.
- Do not extend more than one device out of the rack at the same time.
- Connect the GSS 4490 to a properly grounded outlet.
- Do not overload the power outlet when installing multiple devices in the rack.
- Do not place any object weighing more than 110 lb (50 kg) on top of rack-mounted devices.

Ensuring Proper Airflow

Observe the following general precautions to ensure proper airflow:

- Install the system in an open rack whenever possible. If installation in an enclosed rack is unavoidable, ensure that the rack has adequate ventilation.
- Maintain ambient airflow to ensure normal operation. If the airflow is blocked or restricted, or if the intake air is too warm, an overtemperature condition can occur.
- Allow at least 6 inches (15.24 cm) of clearance around the ventilation openings of the chassis.
- Avoid placing the system in an overly congested rack or directly next to another equipment rack. Heat exhaust from other equipment can enter the inlet air vents and cause an overtemperature condition.
- Equipment near the bottom of a rack might generate excessive heat that is drawn upward and into the intake ports of the equipment above. The warm air can cause an overtemperature condition in the equipment above.

- Ensure that cables from other equipment do not obstruct the airflow through the chassis or impair access to the power supplies or cards. Route cables away from field-replaceable components to avoid disconnecting cables unnecessarily for equipment maintenance or upgrades.

Stabilizing the System

Observe the following general precautions to stabilize the system:

- Install any stabilizers that came with your equipment rack before mounting or servicing the system in the rack.
- Load the rack from the bottom to the top, with the heaviest system at the bottom.
- Do not stack the system on top of any other equipment. If the system falls, it can cause severe bodily injury and damage the equipment.
- If you are using an equipment shelf, ensure that the shelf is constructed to support the weight and dimensions of the chassis.
- If you are using a telco rack, ensure that the weight of the chassis does not make the rack unstable. Secure the telco rack with ceiling brackets if the rack is populated with heavy equipment.
- Bolt the rack to the floor for stability.

Lifting the System

Observe the following general precautions when lifting the system:

- Disconnect all power and external cables before lifting the system.
- Ensure that your footing is solid and the weight of the system is evenly distributed between your feet.
- Lift the system slowly, keeping your back straight. Lift with your legs, not with your back. Bend at the knees, not at the waist.
- Depending on the weight of the system, more than one person might be required to lift it.

Installing the Cisco Global Site Selector 4490

This chapter explains how to install a Cisco Global Site Selector 4490 in an equipment rack. It also provides general instructions for installing a GSS 4490 on a table or workbench.

This chapter contains the following major sections:

- Unpacking and Inspecting the Global Site Selector 4490
- Tools and Parts Required
- Installing Your Unit
- Connecting Cables
- Connecting Power
- Booting the System
- Checking the Front Panel LEDs
- Removing or Replacing a Cisco Global Site Selector 4490

Before you begin the installation be sure to read:

- Chapter 2, Preparing for Installation
- Appendix C, Regulatory Compliance and EMI Class A Warnings
- *Regulatory Compliance and Safety Information for the Cisco Global Site Selector 4490*

Warning **Read the installation instructions before connecting the system to the power source.**

Unpacking and Inspecting the Global Site Selector 4490

The Global Site Selector 4490 shipment contains the following items:

- Global Site Selector 4490
- One RJ-45 to female 25-pin sub-d connector
- Two RJ-45 to female 9-pin sub-d connectors
- One RJ-45 console cable
- One four-post rack mount kit
- One two-post rack mount kit
- Four rubber feet
- Cisco Product Documentation CD-ROM and Warranty Package
- *Cisco Global Site Selector Hardware Installation Guide*
- *Regulatory Compliance and Safety Information for the Cisco Global Site Selector 4490*

The Global Site Selector 4490 is shipped in a protective shipping carton. The GSS 4490 is shipped as a self-contained chassis; no components can be added or removed.

To unpack the GSS 4490, follow these steps:

1. Remove the GSS 4490 accessories from the shipping carton. Save the packing materials in case you need to repack the GSS later.
2. Check the configuration of the GSS 4490 and the accessories against the items listed on the packing slip. Report any discrepancies as described in "If the Product is Damaged".
3. Before installing the GSS 4490, review the information outlined in Chapter 2, Preparing for Installation.

If the Product is Damaged

If any portion of the unit or component is damaged in transit, forward an immediate request to the delivering carrier to perform an inspection of the product and to prepare a damage report. Save the container and all packing materials until the contents are verified.

Concurrently, report the nature and extent of the damage to Customer Service. Report the problem or deficiency to Customer Service along with the model number and serial number. Upon receipt of this information, you will be provided with service instructions, or a Return Material Authorization (RMA) number and shipping information. To obtain assistance, refer to the "Preface".

Tools and Parts Required

Your Global Site Selector 4490 comes with the following rack kits suitable for mounting the GSS 4490 in a 19-inch (48.26-cm) equipment rack:

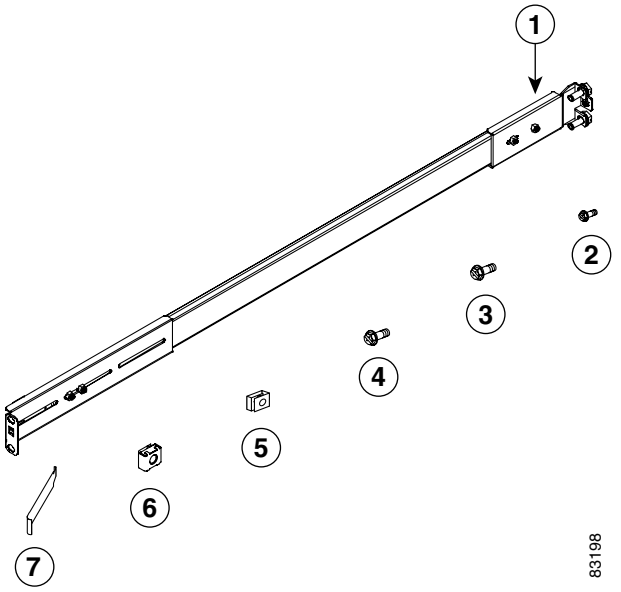
- A sliding rail four-post rack-mount kit
- A two-post rack-mount kit

To install the Global Site Selector 4490 in a rack you need the following parts and tools:

- Flat-blade screwdriver
- Phillips screwdriver
- One rack-mount kit

Figure 3-1 identifies the items included with the four-post rack. If any items are missing or damaged, contact your place of purchase.

Figure 3-1 Four-Post Rack Installation Kit



1	Slide rail assemblies (2)	**2**	M3.5 screws with lock washers (3)
3	M4 screws (6)	**4**	M6 screws (10)
5	Clip nuts (10)	**6**	Cage nuts (10)
7	Cage nut insertion tool (1)		

Note The right and left slide rails are identical.

Installing Your Unit

Place the unit in the desired location. You can mount it in a rack for your convenience, or place it on a solid, stable surface. If you do not plan to install the GSS 4490 in an equipment rack, proceed to the "Installing the Chassis on a Workbench or Tabletop" section.

Racks are marked in vertical increments of 1.75 inches (4.44 cm). Each increment is referred to as a rack unit (RU). A 1-RU device is 1.75 inches (4.44 cm) tall.

Warning **To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:**

- **This unit should be mounted at the bottom of the rack if it is the only unit in the rack.**
- **When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.**

If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.

This section contains the following procedures:

- Installing the Chassis in a Four-Post Rack
- Installing the Chassis in a Two-Post Rack
- Installing the Chassis on a Workbench or Tabletop

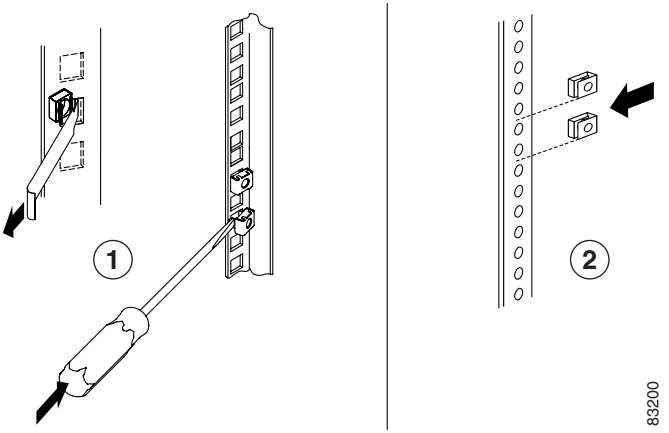
Installing the Chassis in a Four-Post Rack

To install the Global Site Selector 4490 in a four-post rack, follow these steps:

1. Select a 1-RU-size location in the rack to mount the GSS 4490. If the rack holes are not threaded, install a clip nut or cage nut in the top and bottom positions of the selected 1-RU location (Figure 3-2), starting with the right front side of the rack (as viewed from the front of the GSS 4490). Install a clip nut or cage nut in the corresponding positions on the rear of the rack.

   Repeat this step for the left front side of the rack and the corresponding location on the rear of the rack.

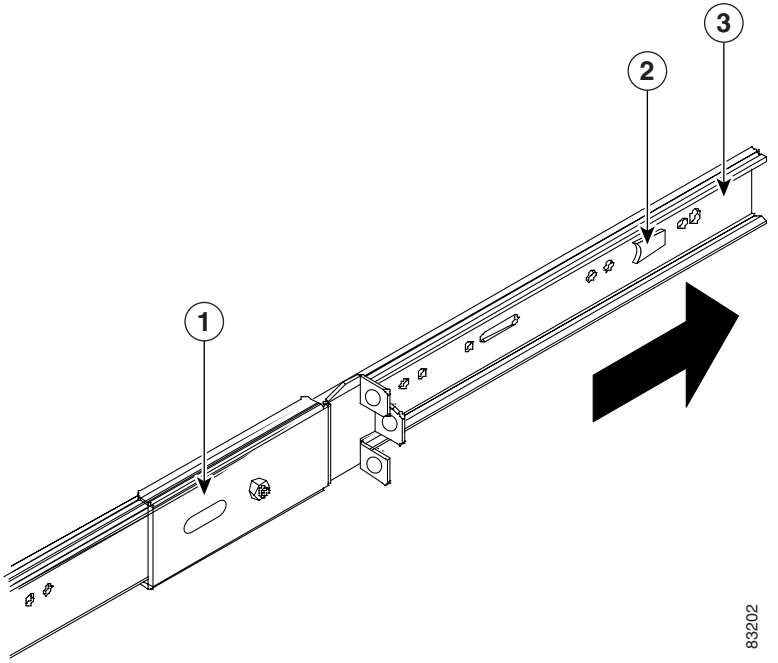
Figure 3-2 Installing Clip Nuts or Cage Nuts in a Non-Threaded Rack



1	Cage nuts	**2**	Clip nuts

2. Remove the inner slide rails from the slide rail assemblies by pressing the release latches on the sides of the slide rail assemblies (Figure 3-3).

Figure 3-3 Removing the Inner Slide Rail

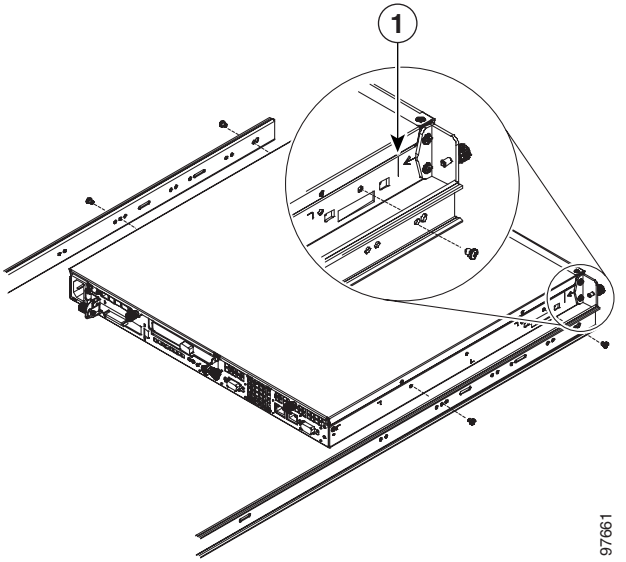


1	Slide rail assembly	**2**	Release latch
3	Inner slide rail		

3. Place an inner slide rail at the alignment marker (labeled 1 in Figure 3-4) as indicated by the arrow on the side of the GSS 4490. Use two M4 screws to secure the inner slide rail to the GSS 4490.

   Repeat this step to attach the other inner slide rail to the GSS 4490.

Figure 3-4 Attaching the Inner Slide Rail to the GSS 4490



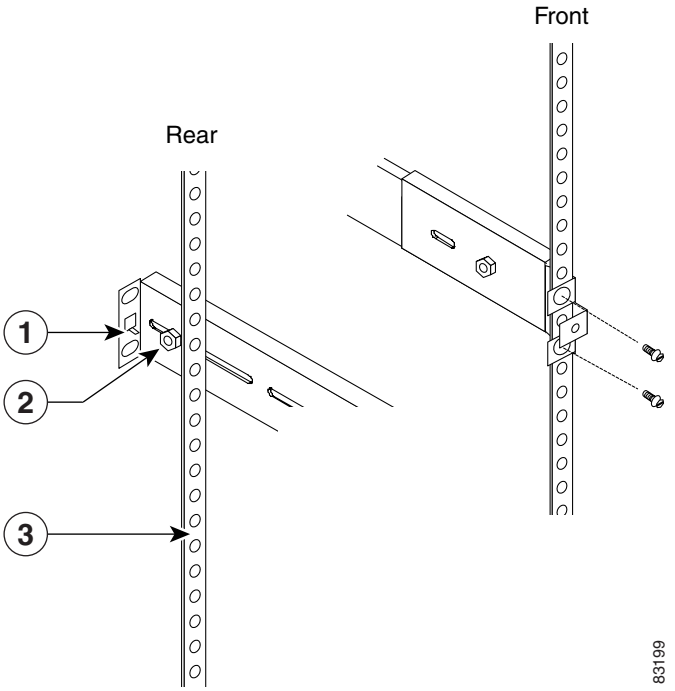
4. Insert the tab on the front of the slide rail assembly through the center hole between the two clip nuts or cage nuts on the front flange.
5. Align the slide rail assembly to the front flange on the rack.

   Repeat step 4 and this step to install the other slide rail assembly.

Note If it is necessary to adjust the length of the slide rail, loosen the adjustment screw on the rear of the slide rail; then adjust the length of the slide rail and tighten the adjustment screw (Figure 3-5).

6. Insert and tighten two M6 screws to secure the slide rail to the front flange (Figure 3-5).

Figure 3-5 Attaching the Slide Rails to the Rack

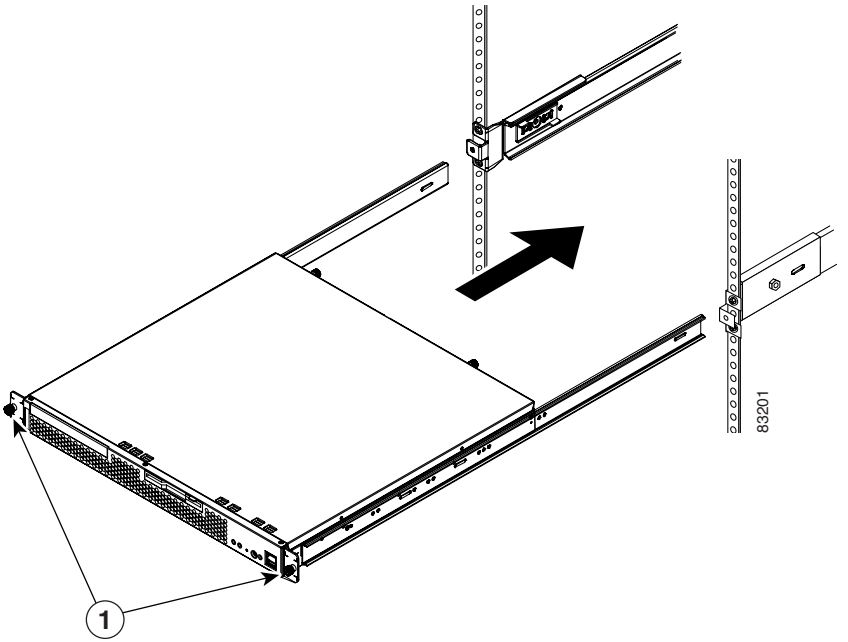


1	Tab	**2**	Adjustment screw
3	Rear flange		

7. Insert and tighten two M6 screws to secure the other slide rail assembly to the rear flange.
8. Align and insert the inner slide rails into the slide rail assemblies until they lock into place.
9. Slide the GSS 4490 into the rack until it locks into place.

10. Tighten the captive screw (labeled 1 in Figure 3-6) on each side of the front of the GSS 4490 to secure it to the rack.

Figure 3-6 Inserting the Inner Slide Rails



1	Release tab		

11. Attach the power cord and the Ethernet cables to the GSS 4490.

    Because the GSS 4490 does not contain cable retention brackets or cable strain relief brackets, you must first bundle the external cables before you route them. Use the remaining two cable straps to bundle the cables.

Note Leave sufficient slack in the cables to allow for sliding the GSS 4490 in or out of the rack.

To remove the GSS 4490 from the rack, reverse these instructions.

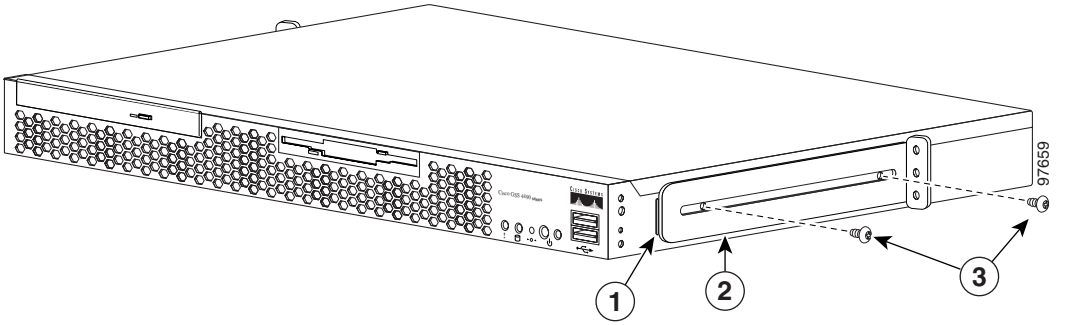
Installing the Chassis in a Two-Post Rack

To install the Global Site Selector 4490 in a two-post rack, follow these steps:

1. Place one of the brackets at the alignment marker (labeled 1 in Figure 3-7) as indicated by the arrow on the side of the GSS 4490. Use two M4 x 8 screws to secure the bracket to the GSS 4490.

   Repeat this step to attach the other bracket to the GSS 4490.

Figure 3-7 Attaching a Bracket to the Right Side of the GSS 4490



1	Alignment marker	**2**	Bracket
3	M4 x 8 screws		

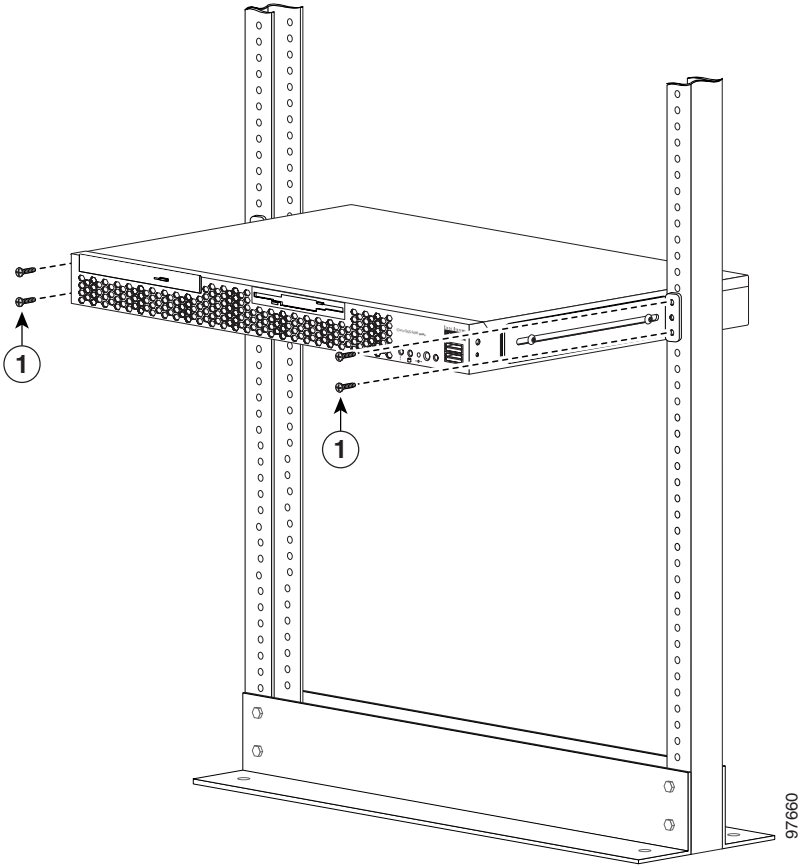
2. Select a location in the rack to mount the GSS 4490, then position the GSS 4490 and brackets in the rack.

3. Align the right side bracket on the GSS 4490 to the two-post rack, then insert and tighten the retaining screws (labeled 1 in Figure 3-8) to secure the GSS 4490 to the rack.

Note Due to variations in rack size and rack holes, Cisco Systems does not provide the two-post rack mounting screws in the rack kit.

Repeat this step to secure the left side bracket to the rack.

Figure 3-8 Attaching the GSS 4490 to the Two-Post Rack



Installing the Chassis on a Workbench or Tabletop

When you install a Global Site Selector 4490 on a workbench or tabletop, ensure that the surface is clean and in a safe location and that you have considered the following:

- The chassis should be installed off the floor. (Dust that accumulates on the floor is drawn into the interior of the chassis by the cooling fans. Excessive dust inside the GSS 4490 can cause overtemperature conditions and component failures.)
- There must be approximately 19 inches (48.26 cm) of clearance at the front and rear of the chassis for accessing network cables or equipment.
- The GSS 4490 must receive adequate ventilation (it is not being installed in an enclosed cabinet where ventilation is inadequate).

Follow these steps to install the GSS 4490 on a workbench or tabletop:

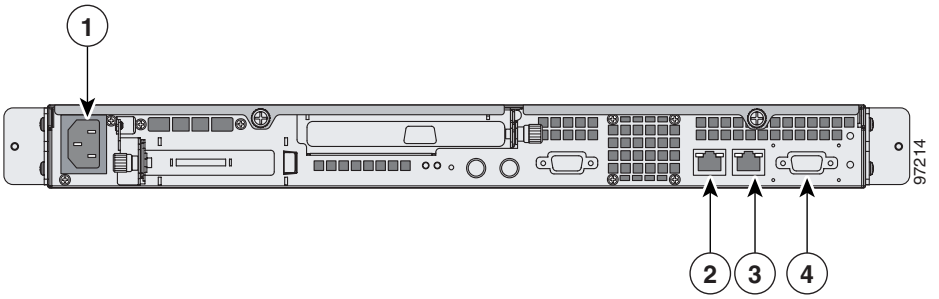
1. Remove any debris and dust from the tabletop or workbench, as well as from the surrounding area. Also make sure that your path between the GSS 4490 and its new location is unobstructed.
2. Attach the rubber feet to the bottom of the chassis. The rubber feet have an adhesive backing. Peel the protective tape off the adhesive and stick the feet to the bottom of a clean chassis surface. Place one foot in each corner.
3. Place the chassis on the tabletop or workbench.
4. Ensure that no exhaust air from other equipment will be drawn into the chassis. Also, ensure that there is adequate clearance at the front and rear of the chassis.

Connecting Cables

To connect network and console cables to your GSS 4490, follow these steps.

1. For network connections, insert a Category 5 UTP cable into the Ethernet 0 or Ethernet 1 receptacle on the GSS 4490 back panel (Figure 3-9).
2. Connect the other end of the network cable to a hub or switch in your network.
3. For console connections, plug the cable into the console port on the GSS 4490 back panel.
4. Connect the other end of the console cable to a console or a communications server.

Figure 3-9 Global Site Selector 4490 Back Panel Ports and Receptacles



1	AC power receptacle	**2**	Ethernet 0 receptacle
3	Ethernet 1 receptacle	**4**	Console port

Connecting Power

To connect power to your AC system, follow these steps:

1. Review the safety information outlined in Chapter 2, Preparing for Installation.
2. Plug the AC power cord into the power cord receptacle at the rear of the GSS 4490 (see Figure 3-9.)
3. Connect the other end of the power cord to a power source at your installation site.
4. Power up all externally connected devices.
5. Press the power control button on the front of the GSS 4490.

Booting the System

When you power up a Cisco Global Site Selector, the boot process:

- Performs hardware initialization and power-on self tests
- Initializes the BIOS
- Initializes the Linux boot manager, LILO (Linux Loader)
- Boots the GSS image (kernel and software)
- Displays the startup banner and splash screen for strong encryption
- Prompts you to log in to the GSS

Note While the GSS 4490 is powering up, the green power LED on the front of the GSS 4490 is on.

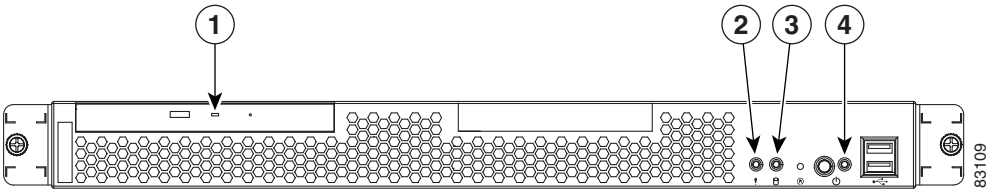
At this point you are ready to use the GSS device. Refer to the *Cisco Global Site Selector Configuration Guide* and the *Cisco Global Site Selector Command Reference* for details on setting up, configuring, and using the GSS device.

If you are booting the GSS 4490 for the first time and the system boots without a startup-configuration file, a setup script automatically runs to quickly guide you through the process of initially configuring the GSS. Refer to the *Global Site Selector Configuration Guide*, Chapter 2, Setting Up Your GSS and GSSM, for details.

Checking the Front Panel LEDs

When the Global Site Selector 4490 is up and running, observe the front panel LEDs. Figure 3-10 shows the location of front panel LEDs, and Table 3-1 describes their function.

Figure 3-10 Front Panel LEDs



1	CD-ROM drive activity	**2**	System error
3	Hard disk drive activity	**4**	Power

Table 3-1 Front Panel LEDs

LED	Color	State	Description
CD-ROM drive activity	Green	On	Indicates that the CD-ROM drive is in use.
System error	Amber	On	Indicates that a system error has occurred. An LED on the diagnostic LED panel will also be on to further isolate the error.
Hard disk drive activity	Green	Flashing	Indicates that the associated hard disk drive is in use.

Table 3-1 Front Panel LEDs (continued)

LED	Color	State	Description
Power	Green	On	Indicates that the GSS 4490 has power.
		Flashing	Indicates that the GSS 4490 is in standby mode.

Removing or Replacing a Cisco Global Site Selector 4490

Warning **Before working on a system that has an On/Off switch, turn OFF the power and unplug the power cord.**

Warning **Ultimate disposal of this product should be handled according to all national laws and regulations.**

Before removing or replacing a GSS 4490, you should logically remove the GSS from the network before physically removing it.

To logically remove a GSS 4490 from the network, follow these steps:

1. Log on to the CLI (see the *Cisco Global Site Selector Configuration Guide*).
2. At the CLI prompt, enable privileged EXEC mode and then global configuration mode on the device. For example:

   ```
   localhost.localdomain> enable
   ```

3. Use the **gss stop** command to stop the GSS software running on the GSS 4490. For example:

   ```
   localhost.localdomain# gss stop
   ```

4. Use the **gss disable** command to disable the selected GSS 4490 and remove any existing configuration, including deleting the GSSM database from the GSS device. This option returns the GSS 4490 to the initial, unenabled state. For example:

```
localhost.localdomain# gss disable
localhost.localdomain# shutdown
```

5. If you are logically removing a GSS or a standby GSSM from the network, access the primary GSSM graphical user interface and click the **Resources** tab.

Note To logically remove the primary GSSM from the network, you must enable the standby GSSM in the role of the primary GSSM using the **gss enable gssm-primary** CLI command. You may then access the newly assigned primary GSSM and logically remove the GSSM from the network. Refer to the *Cisco Global Site Selector Configuration Guid*e for details.

6. Click the **Global Site Selectors** navigation link. The Global Site Selectors list page appears.
7. From the Global Site Selectors list, click the **Modify GSS** icon located to the left of the GSS device you want to delete. The Modifying GSS details page appears.
8. Click the **Delete** icon in the upper right corner of the page. The GSS software prompts you to confirm your decision to delete the GSS device.
9. Click **OK** to confirm your decision. You return to the Global Site Selectors list page with the deleted device removed from the list.

To physically remove a GSS 4490 from your network, follow these steps:

1. Power down the GSS 4490.
2. Disconnect the power cords and network cables.
3. Physically remove the chassis from the rack.

To physically replace a GSS 4490, follow these steps:

1. Remove the GSS 4490 from the network (as described above).
2. Install the new GSS 4490 and configure it using the same configuration parameters (such as IP address) that you used for the removed GSS 4490. Refer to the *Cisco Global Site Selector Configuration Guide*, Chapter 2, Setting Up Your GSS for details.

Troubleshooting the System Hardware

If your Cisco Global Site Selector 4490 is not working as expected, begin troubleshooting using the procedures in this chapter. This chapter guides you through some initial checks and procedures that can solve basic system problems.

This chapter contains the following major sections:

- Checking the Basics
- Checking Connections

Checking the Basics

To solve some basic system problems, follow these steps:

1. Was an alert message issued by the system software?
   - ***Yes***. Check the component named in the alert message.
   - ***No***. Go to step 2.

2. Visually inspect the chassis. Is the system wet or damaged?
   - ***Yes***. Liquid spills, splashes, and excessive humidity can cause damage to the system. If a GSS 4490 gets wet, contact your service representative for instructions. Refer to the Preface.

     If the chassis was dropped or damaged while being moved, you should check the system to see if it functions properly. If an external device attached to the system is dropped or damaged, contact your service representative for instructions. Refer to the Preface.
   - ***No***. Go to step 3.
3. Perform the steps in the "Checking Connections" section.

   Is the problem resolved?
   - ***Yes***. The power to the system was faulty, or the connections to the system were loose. You have fixed the problem.
   - ***No***. Go to step 4.
4. Did the system complete the boot routine?
   - ***Yes***. The system configuration information was correct.
   - ***No***. Call your service representative. Refer to the Preface.

Checking Connections

Loose, incorrect, or improperly connected cables are the most likely source of problems for the GSS 4490 or other external equipment. A quick check of all the cable connections can easily solve these problems. Refer to Chapter 1, Introduction for the location of the front panel controls and indicators and for the location of back panel connections on the GSS 4490.

To check all the connections, follow these steps:

1. Power down the system. Disconnect all the power cables from their electrical outlets.
2. If the system is connected to a power strip (or power distribution unit), turn the power strip off and then on again.

   Is the power strip receiving power?

   - ***Yes***. Go to step 5.
   - ***No***. Go to step 3.
3. Plug the power strip into another electrical outlet.

   Is the power strip receiving power?

   - ***Yes***. The original electrical outlet probably does not function. Use a different electrical outlet.
   - ***No***. Go to step 4.
4. Plug a system that you know works into the electrical outlet.

   Does the system receive power?

   - ***Yes***. The power strip is probably not functioning properly. Use another power strip.
   - ***No***. Go to step 5.
5. Reconnect the system to the electrical outlet or power strip.

   Make sure that all connections fit tightly together. Ensure that the Ethernet and Console cables are correct for use with the GSS 4490 (refer to Chapter 1, Introduction).

6. Power up the system.

   Is the problem resolved?

   - ***Yes***. The connections were loose. You have fixed the problem.
   - ***No***. Call your service representative. Refer to the Preface.

Maintaining the Cisco Global Site Selector 4490

Proper use of preventive maintenance procedures can keep the Cisco Global Site Selector 4490 in top operating condition and minimize the need for costly, time-consuming service procedures. This chapter contains maintenance procedures that you should perform regularly.

This chapter includes the following major sections:

- Maintaining Your Site Environment
- Using Power Protection Devices

Maintaining Your Site Environment

An exhaust fan in the power supply cools the power supply and system by drawing air in through various openings in the system and blowing it out the back. However, the fan also draws dust and other particles into the system, causing contaminant buildup, which results in an increase in the system's internal temperature and interferes with the operation of various system components.

To avoid these conditions, we recommend keeping your work environment clean to reduce the amount of dust and dirt around the system, thereby reducing the amount of contaminants drawn into the system by the power supply fan.

This section discusses various environmental factors that can adversely affect system performance and longevity. It covers:

- Temperature
- Humidity
- Altitude
- Dust and Particles
- Corrosion
- Electrostatic Discharge
- Electromagnetic and Radio Frequency Interference
- Magnetism
- Power Source Interruptions

Temperature

Temperature extremes can cause a variety of problems, including premature aging and failure of chips or mechanical failure of devices. Extreme temperature fluctuations can cause chips to become loose in their sockets and can cause expansion and contraction of disk drive platters, resulting in read or write data errors.

To minimize the negative effects of temperature on system performance, follow these guidelines:

- Ensure that the system is operated in an environment no colder than 50°F (10°C) or hotter than 95°F (35°C).
- Ensure that the system has adequate ventilation. Do not place it within a closed-in wall unit or on top of cloth, which can act as insulation. Do not place it in direct sunlight, particularly in the afternoon. Do not place it next to a heat source of any kind, including heating vents during winter.

Adequate ventilation is particularly important at high altitudes. System performance may not be optimum when the system is operating at high temperatures as well as high altitudes.

- Make sure that all slots and openings on the system remain unobstructed, especially the fan vent on the back of the system.
- Clean the system at regular intervals to avoid any buildup of dust and debris, which can cause a system to overheat.
- If the system has been exposed to abnormally cold temperatures, allow a 2-hour warm-up period to bring it up to normal operating temperature before turning it on. Failure to do so may cause damage to internal components, particularly the hard disk drive.

Humidity

High-humidity conditions can cause moisture migration and penetration into the system. This moisture can cause corrosion of internal components and degradation of properties such as electrical resistance, thermal conductivity, physical strength, and size. Extreme moisture buildup inside the system can result in electrical shorts, which can cause serious damage to the system.

Each system is rated to operate at 8 to 80 percent relative humidity, with a humidity gradation of 10 percent per hour. Buildings in which climate is controlled by air conditioning in the warmer months and by heat during the colder months usually maintain an acceptable level of humidity for system equipment. However, if a system is located in an unusually humid location, a dehumidifier can be used to maintain the humidity within an acceptable range.

Altitude

Operating a system at high altitude (low pressure) reduces the efficiency of forced and convection cooling and can result in electrical problems related to arcing and corona effects. This condition can also cause sealed components with internal pressure, such as electrolytic capacitors, to fail or perform at reduced efficiency.

Each system is rated to operate at a maximum altitude of 6500 feet (2000 meters) and can be stored at a maximum altitude of 15,000 feet (4570 meters).

Dust and Particles

A clean operating environment can greatly reduce the negative effects of dust and other particles, which act as insulators and interfere with the operation of a system's mechanical components. Also, in addition to regular cleaning, you should follow these guidelines to deter contamination of the system equipment:

- Do not permit smoking anywhere near the system.
- Do not permit food or drink near the system.
- Use dust covers when the system is not in use.
- Close windows and outside doors to keep out airborne particles.

Corrosion

The oil from a person's fingers or prolonged exposure to high temperature or humidity can corrode the gold-plated edge connectors and pin connectors on various devices in the system. This corrosion on system connectors is a gradual process that can eventually lead to intermittent failures of electrical circuits.

To prevent corrosion, you should avoid touching contacts on boards and cards. Protecting the system from corrosive elements is especially important in moist and salty environments, which tend to promote corrosion. Also, as a further deterrent to corrosion, the system should not be used in extreme temperatures, as explained in the "Temperature" section.

Electrostatic Discharge

Electrostatic discharge (ESD) results from the buildup of static electricity on the human body and certain other objects. This static electricity is often produced by simple movements such as walking across a carpet. ESD is a discharge of a static electrical charge that occurs when a person whose body contains such a charge touches a component in the system. This static discharge can cause components, especially chips, to fail. ESD is a problem particularly in dry environments where the relative humidity is below 50 percent.

To reduce the effects of ESD, you should observe the following guidelines:

- Wear a grounding wrist strap. If a grounding wrist strap is unavailable, touch an unpainted metal surface on the chassis periodically to neutralize any static charge.
- Keep components in their antistatic packaging until they are installed.
- Avoid wearing clothing made of wool or synthetic materials.

Electromagnetic and Radio Frequency Interference

Electromagnetic interference (EMI) and radio frequency interference (RFI) from a system can adversely affect devices such as radio and television (TV) receivers operating near the system. Radio frequencies emanating from a system can also interfere with cordless and low-power telephones. Conversely, RFI from high-power telephones can cause spurious characters to appear on the system's monitor screen.

RFI is defined as any EMI with a frequency above 10 kHz. This type of interference can travel from the system to other devices through the power cable and power source or through the air like transmitted radio waves. The Federal Communications Commission (FCC) publishes specific regulations to limit the amount of EMI and RFI emitted by computing equipment. Each system meets these FCC regulations.

To reduce the possibility of EMI and RFI, follow these guidelines:

- Operate the system only with the system cover installed.
- Ensure that the screws on all peripheral cable connectors are securely fastened to their corresponding connectors on the back of the system.
- Always use shielded cables with metal connector shells for attaching peripherals to the system.

Magnetism

Because they store data magnetically, hard disk drives are extremely susceptible to the effects of magnetism. Hard disk drives should never be stored near magnetic sources such as the following:

- Monitors
- TV sets
- Printers
- Telephones with real bells
- Fluorescent lights

Power Source Interruptions

Systems are especially sensitive to variations in voltage supplied by the AC power source. Overvoltage, undervoltage, and transients (or spikes) can erase data from memory or even cause components to fail. To protect against these types of problems, power cables should always be properly grounded and one or both of the following methods should be used:

- Use one of the power protection devices described in the "Using Power Protection Devices" section.
- Place the system on a dedicated power circuit (rather than sharing a circuit with other heavy electrical equipment). In general, do not allow the system to share a circuit with any of the following:
  - Copier machines
  - Air conditioners
  - Vacuum cleaners
  - Space heaters
  - Power tools
  - Teletype machines

- Adding machines
- Laser printers
- Facsimile machines
- Any other motorized equipment

Besides these appliances, the greatest threats to a system's supply of power are surges or blackouts caused by electrical storms. Whenever possible, turn off the system and any peripherals and unplug them from their power sources during thunderstorms.

If a blackout occurs—even a temporary one—while the system is turned on, turn off the system immediately and disconnect it from the electrical outlet. Leaving the system on may cause problems when the power is restored; all other appliances left on in the area can create large voltage spikes that can damage the system.

Using Power Protection Devices

A number of devices are available that protect against power problems such as power surges, transients, and power failures. The following subsections describe some of these devices.

Surge Protectors

Surge protectors are available in a variety of types and usually provide a level of protection commensurate with the cost of the device. Surge protectors prevent voltage spikes, such as those caused during an electrical storm, from entering a system through the electrical outlet. Surge protectors, however, do not offer protection against brownouts, which occur when the voltage drops more than 20 percent below the normal AC line voltage level.

Line Conditioners

Line conditioners go beyond the overvoltage protection of surge protectors. Line conditioners keep a system's AC power source voltage at a fairly constant level and therefore can handle brownouts. Because of this added protection, line conditioners cost more than surge protectors—up to several hundred dollars. However, these devices cannot protect against a complete loss of power.

Uninterruptible Power Supplies

Uninterruptible power supply (UPS) systems offer the most complete protection against variations in power because they use battery power to keep the system running when AC power is lost. The battery is charged by the AC power while it is available, so once AC power is lost, the battery can provide power to the system for a limited amount of time—from 15 minutes to an hour or so—depending on the UPS system.

Surge protectors should be used with all UPS systems, and the UPS system should be Underwriters Laboratories (UL) safety-approved.

Specifications

This appendix lists the hardware specifications for the Cisco Global Site Selector 4490.

Table A-1 Global Site Selector 4490 Specifications

Specification	Description
Power supply	1 AC-input
Dimensions	• Height: 1.75 in. (44 mm), 1 RU • Depth: 16.54 in. (424 mm) • Width: 16.69 in. (430 mm)
Weight	Maximum weight: 28 lb (12.7 kg) depending on configuration

Table A-1 Global Site Selector 4490 Specifications (continued)

Specification	Description
Electrical input	• Sine-wave input (47 to 63 Hz) required • Input voltage low range: – Minimum: 100 VAC – Maximum: 127 VAC • Input voltage high range: – Minimum: 200 VAC – Maximum: 240 VAC • Input kilovolt-amperes (kVA), approximately: – Minimum: 0.0870 kVA – Maximum: 0.150 kVA
Ports	• 1000BASE-TX, 100BASE-TX, 10BASE-T (dual) Ethernet ports • Console port
Temperature	• Operating: 50 to 95° F (10 to 35° C) • Nonoperating: –40 to 140° F (–40 to +60° C)
Humidity	• Operating: 8 to 80% • Non-operating: 8 to 80%
Altitude	Maximum altitude: 6500 ft (2000 m)
Acoustical noise emissions	• Sound power, idling: 6.5 bel maximum • Sound power, operating: 6.5 bel maximum

Connecting a Modem to the GSS 4490 Console Port

This appendix explains how to configure a dial-up modem and connect it to the console port on the Cisco Global Site Selector 4490. Connecting a modem to the GSS 4490 allows you to remotely perform the same GSS console operations as you would locally. The GSS supports the following modems:

- 3Com (US Robotics) Courier Model 3453 Modem
- 3Com OfficeConnect Model 3294 Modem
- 3Com (US Robotics) Sportster Model 5686 Modem
- MultiTech Model MT5634ZBA Modem

This appendix includes the following sections:

- Configuring a Modem
- Cabling a Modem to the GSS 4490

Configuring a Modem

You must configure the modem before you can connect it to the GSS 4490. You can connect the modem to a terminal or a PC using a terminal emulation program, such as Hyperterminal. If you connect the modem to the COM port on a PC, you need the following cable and connectors:

- RJ-45-to-RJ-45 rolled cable
- RJ-45-to-DB-25 modem adapter
- DB-9-to-RJ-45 terminal adapter

Figure B-1 shows the pin number assignments for the 9-pin, male D-shell console port connector on the back of the GSS 4490. These pin number assignments conform to the industry standard.

Figure B-1 Console Port Connector

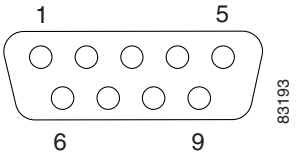


Table B-1 connector pinouts for the GSS 4490 console port.

Table B-1 Console Port Connector Pinouts

Pin Number	Signal Name
1	DCD (Data Carrier Detect)
2	RD (Receive Data)
3	TD (Transmit Data)
4	DTR (Data Terminal Ready)
5	SG (Signal Ground)
6	DSR (Data Set Ready)
7	RTS (Request to Send)
8	CTS (Clear to Send)
9	RI (Ring Indicator)

You configure the modem by entering commands from the Attention (AT) command set and, if applicable, setting the configuration switches on the modem. Although the process to configure the modem may vary from one modem to another, configure your modem so that its resulting behavior is as follows:

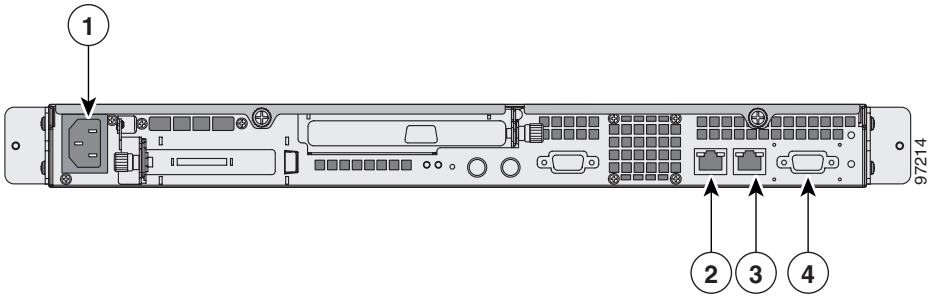
- Answers a call on the first ring
- Disables both hardware and software flow control mechanisms
- Ignores modem control signals DTR and RTS
- Suppresses echoing of command mode input
- Disables recognition of AT commands

Cabling a Modem to the GSS 4490

After you configure the modem, perform the following to cable a modem to the GSS 4490:

1. Unplug the flat rolled RJ-45-to-RJ-45 cable from the terminal adapter on the PC and connect the cable to the console port on the GSS 4490 (Figure B-2).

Figure B-2 Global Site Selector 4490 Back Panel Ports and Receptacles



1	AC power receptacle	**2**	Ethernet 0 receptacle
3	Ethernet 1 receptacle	**4**	Console port

2. Make sure that the settings on the remote console match the GSS default settings specified in Table B-2.

Table B-2 GSS Console Port Default Settings

Parameters	Default Settings
Baud	9600
Data Bits	8
Parity	None
Stop Bits	1
Terminal Type	VT100/ANSI
Flow Control	None

Note When you remotely log in to the GSS 4490 through a modem, make sure that you log out before disconnecting from the session. Use the **exec-timeout** *timeout* command to set the maximum amount of time that the console session can be idle on the GSS 4490 before the GSS 4490 logs it out. By default, the timeout is 150 minutes.

Regulatory Compliance and EMI Class A Warnings

This appendix provides international agency compliance information and EMI class A warnings applicable to the Cisco Global Site Selector 4490. Use the information in this appendix in conjunction with the information contained in the following guides:

- *Regulatory Compliance and Safety Information for the Cisco Global Site Selector 4490*
- *Cisco Global Site Selector Configuration Guide*
- *Cisco Global Site Selector Command Reference*
- *Release Note for the Cisco Global Site Selector*

This appendix includes the following sections:

- Regulatory Compliance
- EMI Class A Warning Statements

Regulatory Compliance

Table C-1 lists regulatory compliance and agency approvals for the Cisco Global Site Selector 4490.

Table C-1 Regulatory Compliance

Item	Description
Regulatory Compliance	Products bearing CE Mark indicate compliance with the 73/23/EEC directives, which include the safety and EMC standards listed in this table.
Safety	UL 60950 CAN/CSA-C22.2 No. 60950 EN 60950 IEC 60950
EMC	FCC Part 15 (CFR 47) Class A ICES-003 Class A EN 55022 Class A with UTP cables CISPR22 Class A with UTP cables AS/NZS 3548 Class A with UTP cables VCCI Class A with UTP cables EN 55024 EN 50082-1 In addition to the above, the Cisco Global Site Selector 4490 units, except systems that use the 36-GB hard drive, comply with the following requirements: EN55022 Class B with STP cables CISPR22 Class B with STP cables AS/NZS 3548 Class B with STP cables VCCI Class B with STP cables

EMI Class A Warning Statements

FCC Class A Warning

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Warning **Modifying the equipment without Cisco's authorization may result in the equipment no longer complying with FCC requirements for Class A or Class B digital devices. In that event, your right to use the equipment may be limited by FCC regulations, and you may be required to correct any interference to radio or television communications at your own expense.**

Canada Class A Warning

Warning **This Class A digital apparatus complies with Canadian ICES-003.**

Attention **Cet appareil de la classe A est conforme á la norme NMB-003 de Canada.**

CISPR 22 Class A Warning

Warning **This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.**

VCCI Class A Notice for Japan

Warning **This is a Class A product based on the standard of the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance may arise. When such trouble occurs, the user may be required to take corrective actions.**

Taiwan and Other Traditional Chinese Markets Class A Warning

Warning **This is a Class A Information Product, when used in residential environment, it may cause radio frequency interference, under such circumstances, the user may be requested to take appropriate countermeasures.**

Hungary Class A Warning

Warning

This equipment is a class A product and should be used and installed properly according to the Hungarian EMC Class A requirements (MSZEN55022). Class A equipment is designed for typical commercial establishments for which special conditions of installation and protection distance are used.

A

AC power
  cord, connecting 3-15
  receptacle 1-8
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